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## Identification of Voltage-Activated Calcium Currents in Renal Afferent and Efferent Arterioles of the Rat

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Based on indirect methods, it is suggested that both L- and T-type Ca channels mediate signaling in the renal afferent arteriole (AA) and that T-type Ca channels are involved in signaling in the efferent arteriole (EA). Our study was initiated to characterize Ca currents in these vessels, directly, using patch clamp. Native myocytes were isolated from individually isolated rat AA and EA and from tail arteries. Inward currents were measured in physiologic 1.5 mmol/L Ca and 10 mmol/L Ba using the whole-cell configuration. By exploiting known differences in activation and inactivation properties and sensitivities to nifedipine and kurtoxin, we could readily demonstrate the presence of both L- and T-type Ca channels in myocytes from the rat tail artery. AA myocytes exhibited relatively large Ca current densities ( $-2.0 \pm 0.2$  pA/pF), which increased 3.6 fold in Ba. These currents were blocked by nifedipine, but not by kurtoxin or mibefradil and did not exhibit the activation and inactivation characteristics of T-type Ca channels, compared to tail artery myocytes. EA myocytes did not exhibit a marked voltage-activated inward current in 1.5 mmol/L Ca. Thus, our findings support the physiologic role of L-type Ca channels in the AA, but not EA, and do not support the premise that T-type Ca channels are significantly present in either vessel. Supported by the Royal Society and the Alberta Heritage Foundation for Medical Research.